

# Technica Manua

# **STEREO** DC INTEGRATED AMPLIFIER RA-1()1()

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Serial Nos. Beginning NC59118

#### ADDENDA (November, 1981)

- 1. FETs Q401 and Q402 on the MC head-amp circuit can accept both (S) and (R) IDSS ranks.
  - a. Therefore it is necessary to use appropriate drain resistors R403 and R404 according to the IDSS rank of the FETs.

2SK155: For IDSS (S) rank; R403, R404 - 820 ohms (conventional value)

> For IDSS (R) rank: R403, R404 - 2.7 kilohms

- b. A 2.2-kilohm resistor is additionally installed between the junction of R438 and R439 on +B circuit of the MC head-amp when (R) rank FET is used.
- c. 2SK155 (R) and 2SK155 (S) are replaceable by 2SK130A (K) and 2SK130A (L) respectively.

Part No. 2SK130A (K) - 302001135 2SK130A (L) - 302001136

- 2. For 220V/240V spec. units, noise cancellers C002 and C003 installed between the primary side of the power supply circuit are eliminated.
  - C001 is changed from 0.047 to 0.022 (PME265MB-522, Part No. 470101136).
- 3. For 220V/240V spec. units, secondary fuse F901 is changed from F1A to T1A (Part No. 345952100).

#### ADDENDA (Novembre, 1981)

- 1. Les FET Q401 et Q402 du circuit d'ampli frontal MC peuvent accepter les niveaux IDSS (S) et (R).
  - a. En conséquence il est nécessaire d'utiliser des résistances de drainage R403 et R404 adéquates en fonction du niveau IDSS des FET.

2SK155: Pour niveau (S) Ipss; R403, R404 -820 ohms (valeur conventionnelle) Pour niveau (R) IDSS; R403, R404 -2,7 kilohms.

- b. Une résistance additionnelle de 2,2 kilohms est ajoutée entre la jonction de R438 et R439 sur le circuit +B de l'ampli frontal MC lorsque le FET utilisé est de niveau (R).
- c. 2SK155 (R) et 2SK155 (S) sont remplaçables respectivement par 2SK130A (K) et 2SK130A (L).

No. de pièce 2SK130A (K) - 302001135 No. de pièce 2SK130A(L) - 302001136

- 2. Pour les unités alimentées sur 220V/240V, les suppresseurs de bruit C002 et C003 insérés entre le côté primaire du circuit d'alimentation sont éliminés. C001 passe de 0,047 à 0,022 (PME265MB522, No. de pièce 470101136).
- 3. Pour les unités alimentées sur 220V/240V, le fusible secondaire F901 passe de F1A à T1A (No. de pièce 345952100).

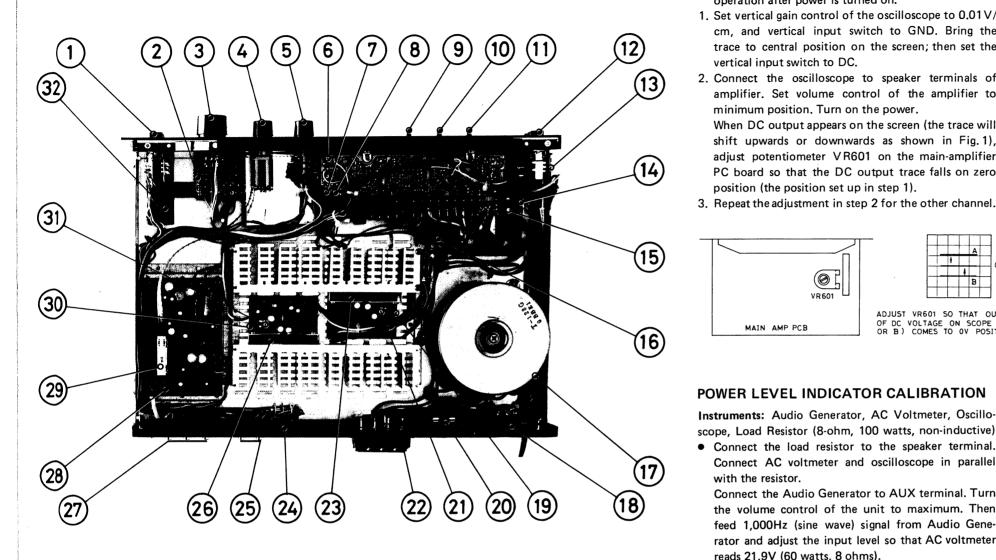
THE ROTEL CO., LTD. ROTEL ELECTRONICS CO., LTD. 2ND FLOOR, EVERGLORY BLDG., NO. 305, SECTION 3, NANKING E. ROAD, TAIPEI, TAIWAN, REPUBLIC OF CHINA ROTEL OF AMERICA, INC. ROTEL HIFI LIMITED

1-36-8 OHOKAYAMA, MEGURO-KU, TOKYO 152, JAP 🔊

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# Chassis Layout (Top View)

Installation du châssis (vue de dessus)



- 1. FUNCTION SELECTOR
- 2. TONE AMP PCB
- 3. VOLUME CONTROL
- 4. PHONO SELECTOR UNIT
- 5. TAPE MONITOR SWITCH
- 6. INDICATOR DRIVER PCB
- 7. VR812, R-CH LEVEL IND CAL
- 8. VR811, L-CH LEVEL IND CAL
- 9. TREBLE CONTROL
- 10. MID CONTROL
- 11. BASS CONTROL
- 12. POWER SWITCH
- 13. SPEAKER SWITCH PCB
- 14. POWER SUPPLY PCB
- 15. FUSE, F901, SECONDARY
- 16. PROTECTION RELAY

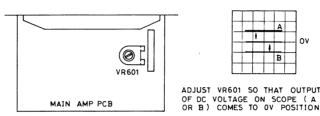
- 17. POWER TRANSFORMER
- 18. VOLTAGE SELECTOR
- 19. MAIN AMP PCB, L-CH
- 20. FUSE, F001, PRIMARY
- 21. VR601, DC BALANCE ADJ, L-CH
- 22. SPEAKER TERMINALS
- 23. POWER AMP IC, IC601, L-CH
- 24. DIN SOCKET
- 25. TAPE MONITOR JACKS
- 26. POWER AMP IC, IC601', R-CH 27. INPUT JACKS
- 28. PHONO AMP PCB
- 29. PHONO SWITCH
- 30. MAIN AMP PCB, R-CH
- 31. VR601', DC BALANCE ADJ, R-CH
- 32. MUTING SWITCH PCB

# Adjustment Procedures

#### DC BALANCE ADJUSTMENT

Instrument: Oscilloscope

- It will take 3 to 7 seconds for the unit to go into operation after power is turned on.
- 1. Set vertical gain control of the oscilloscope to 0.01V/ cm, and vertical input switch to GND. Bring the trace to central position on the screen; then set the vertical input switch to DC.
- 2. Connect the oscilloscope to speaker terminals of amplifier. Set volume control of the amplifier to minimum position. Turn on the power,
- When DC output appears on the screen (the trace will shift upwards or downwards as shown in Fig. 1). adjust potentiometer VR601 on the main-amplifier PC board so that the DC output trace falls on zero position (the position set up in step 1).
- 3. Repeat the adjustment in step 2 for the other channel.



Instruments: Audio Generator, AC Voltmeter, Oscillo-

Connect AC voltmeter and oscilloscope in parallel

Connect the Audio Generator to AUX terminal. Turn

the volume control of the unit to maximum. Then

feed 1,000Hz (sine wave) signal from Audio Generator and adjust the input level so that AC voltmeter

Maintaining this state, adjust the potentiometer

VR811 or VR 812 on the Indicator Driver PC board

so that the level indicator reads OdB (OdB LED turns

• Follow the same procedures to adjust the other chan-

with the resistor.

on). See Fig. 2.

reads 21.9V (60 watts, 8 ohms).

nel by turning VR812 or VR811.

Réglage

Instrument: Oscilloscope

l'alimentation.

établie dans le pas 1).

Réglage de l'équilibrage courant continu

• Il prendra 3 à 7 secondes pour l'unité afin de mettre

en opération depuis que l'alimentation soit allumée.

1. Poser la commande de gain vertical de l'oscilloscope à

puis poser l'interrupteur d'entrée verticale à DC.

2. Connecter l'oscilloscope aux bordes de haut-parleur

0.01 V/cm, et l'interrupteur d'entrée verticale à GND.

Apporter la trace à la position centrale sur l'écran;

de l'amplificateur. Poser la commande de volume de

l'amplificateur à la position minimale. Allumer

Lorsque la sortie de CC apparaît sur l'écran (la trace

déplacera en haut ou en bas comme montré sur la Fig.

1), ajuster le potentiomètre VR601 sur la plaquette

d'amplification principale de sorte que la trace de

sortie de CC tombe sur la position zéro (la position

3. Répéter l'ajustage dans le pas 2 pour l'autre canal.

### Réglage du indicateur de niveau de puissance

mètre à courant alternatif, un oscilloscope, une résistance de charge (de 8 ohms, 100 watts, non-inductive).

Connectez le voltmètre à courant alternatif et l'oscilloscope en parallèl avec la résistance.

Connectez le générateur aux bornes auxilliaires

maximum. Puis envoyez un signal de 1.000Hz (onde "LED"sont éteintes. Voir figure 2.

• Suivez le même procédé pour ajuster l'autre canal en tournant le VR812 ou VR811.

Instruments: un générateur d'audio fréquences, un volt-

• Connectez la résistance de charge aux bornes des

(AUX) de l'unité. Tournez le potentiomètre de volume de l'unité au

sinusoïdale) avec le générateur et ajustez le niveau d'entrée de façon que le voltmètre indique une mesure de 21,9V (60 watts, 8 ohms), tout en conservant cet arrangement, réglez le potentiomètre VR811 ou VR812 de la plaquette de l'étage du bord d'attaque de façon que le voltmètre de crête indique une mesure de OdB (à OdB les diodes lumineuses

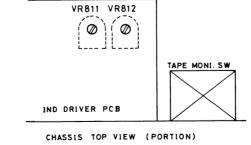


Fig. 2

# Repair Parts Lis Liste des pièces

Schematic Location	Des
TRAN	SISTOR
Q401, 402 Q403, 404, 904 Q405, 902 Q501, 502 Q601 Q811, 812, 815 816, 906 Q813, 814 Q817, 818, 821 822 to 833 Q819, 820 Q901, 903	2SK155 2SA921 2SC131 2SC132 µPA63I 2SC828 2SC138 2SA564 2SK68,4 2SC198
D401, 402 D403 D601, 906 D602, 811 to 814 D815 to 818 D819 to 829 903 to 905 D830 D901 D902 D907, 908 D909, 910	RD3-6E BZ-120 WZ-162 WZ-067 1K188, MA-150 RB-152 S5VB-2 SR1K-4 BZ-240 BZ-140
IC401, 402 IC501, 703 IC601 IC701, 702, 811 IC812, 813	SEL88( HA-145 NJM45 SI-146( NJM45 TA761
VR501 VR601 VR701, 702, 703 VR811, 812 VR001	250KW 300B, I 50KWT 50KB, 100KB
S1	S Push 3
S2 S3 S4 S5, 6, 7, 8 (1 set) S9, 10 (1 set) S11, 12, 13 (1 set)	Selecto Slide, F Rotary Push 1- Push 4- Push 2- Push 3-
L601 RY901 T001	Coil, A Relay, Power (120, 2
PL001 F901	(100, 1 Lamp, Fuse, 1 (STD) Fuse, 1 (CEE)
F001	Fuse, £ (STD) Fuse, 2 Type (

# Adjustment Procedures

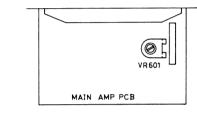
#### DC BALANCE ADJUSTMENT

Instrument: Oscilloscope

- It will take 3 to 7 seconds for the unit to go into operation after power is turned on.
- Set vertical gain control of the oscilloscope to 0.01V/ cm, and vertical input switch to GND. Bring the trace to central position on the screen; then set the vertical input switch to DC.
- 2. Connect the oscilloscope to speaker terminals of amplifier. Set volume control of the amplifier to minimum position. Turn on the power.

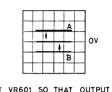
When DC output appears on the screen (the trace will shift upwards or downwards as shown in Fig. 1), adjust potentiometer VR601 on the main-amplifier PC board so that the DC output trace falls on zero position (the position set up in step 1).

3. Repeat the adjustment in step 2 for the other channel.



(15)

(16)



ADJUST VR601 SO THAT OUTPUT OF DC VOLTAGE ON SCOPE ( A OR B ) COMES TO 0V POSITION.

# Réglage

#### Réglage de l'équilibrage courant continu

Instrument: Oscilloscope

- Il prendra 3 à 7 secondes pour l'unité afin de mettre en opération depuis que l'alimentation soit allumée.
- Poser la commande de gain vertical de l'oscilloscope à 0,01 V/cm, et l'interrupteur d'entrée verticale à GND. Apporter la trace à la position centrale sur l'écran; puis poser l'interrupteur d'entrée verticale à DC.
- 2. Connecter l'oscilloscope aux bordes de haut-parleur de l'amplificateur. Poser la commande de volume de l'amplificateur à la position minimale. Allumer l'alimentation.

Lorsque la sortie de CC apparaît sur l'écran (la trace déplacera en haut ou en bas comme montré sur la Fig. 1), ajuster le potentiomètre VR601 sur la plaquette d'amplification principale de sorte que la trace de sortie de CC tombe sur la position zéro (la position établie dans le pas 1).

3. Répéter l'ajustage dans le pas 2 pour l'autre canal.

Instruments: Audio Generator, AC Voltmeter, Oscilloscope, Load Resistor (8-ohm, 100 watts, non-inductive)

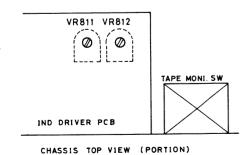
POWER LEVEL INDICATOR CALIBRATION

Connect the load resistor to the speaker terminal.
 Connect AC voltmeter and oscilloscope in parallel with the resistor.

Connect the Audio Generator to AUX terminal. Turn the volume control of the unit to maximum. Then feed 1,000Hz (sine wave) signal from Audio Generator and adjust the input level so that AC voltmeter reads 21.9V (60 watts, 8 ohms).

Maintaining this state, adjust the potentiometer VR811 or VR 812 on the Indicator Driver PC board so that the level indicator reads 0dB (0dB LED turns on). See Fig. 2.

• Follow the same procedures to adjust the other channel by turning VR812 or VR811.



Réglage du indicateur de niveau de puissance

**Instruments:** un générateur d'audio fréquences, un voltmètre à courant alternatif, un oscilloscope, une résistance de charge (de 8 ohms, 100 watts, non-inductive).

 Connectez la résistance de charge aux bornes des haut-parleurs.

Connectez le voltmètre à courant alternatif et l'oscilloscope en parallèl avec la résistance.

Connectez le générateur aux bornes auxilliaires (AUX) de l'unité.

Tournez le potentiomètre de volume de l'unité au maximum. Puis envoyez un signal de 1.000Hz (onde sinusoïdale) avec le générateur et ajustez le niveau d'entrée de façon que le voltmètre indique une mesure de 21,9V (60 watts, 8 ohms), tout en conservant cet arrangement, réglez le potentiomètre VR811 ou VR812 de la plaquette de l'étage du bord d'attaque de façon que le voltmètre de crête indique une mesure de 0dB (à 0dB les diodes lumineuses "LED"sont éteintes. Voir figure 2.

 Suivez le même procédé pour ajuster l'autre canal en tournant le VR812 ou VR811.

### Fig. 2

# Repair Parts List Liste des pièces de rechange

Q501, 502         2SC1327 (R or S) μPA63H (M1 or M2), Dual FET 302001121           Q811, 812, 815 816, 906         3CS2828 (S or T)         301201134           Q817, 818, 821 822 to 833         2SC3384 (R or S)         301201162           Q819, 820         2SK68A (L or M)         302001113           Q901, 903         2SC1980 (S or T)         301201176           Q901, 903         2SC1980 (S or T)         301201171           D403         BZ-120, Zener, 3.6V, 400mW 300313030           D601, 906         WZ-162, Zener, 16V, 500mW W300313030           D819 to 829 903 to 905         MA-150, Diode (Gs)         300111016           D830         RB-152, Rectifier 300919032         300919032           D902         SR1K-4, Rectifier 300919032         300919032           SR1K-4, Rectifier 300919039         300313004           D909, 908         BZ-240, Zener, 24V, 1W 300313006           D909, 909         BZ-140, Zener, 14V, 1W 300313009           D909, 910         BZ-140, Zener, 14V, 1W 300313009           SEL8801R02, LED ARRAY 300414039         303452120           IC601, 703         NJM4558D-D, Tone Amp etc. 303452152           IC601         SI-1460H, Power Amp 30345220           VARIABLE RESISTORS           VR501         250KWT, Balance Control 505212118	Schematic Location	Description	Part No.
Q401, 402         2SK155 (S)         302001123           Q403, 404, 904         2SA921 (S or T)         301001145           Q501, 502         2SC1327 (R or S)         301201153           Q601         μPA63H (M1 or M2), Dual FET 302001121           Q811, 812, 815         2SC828 (S or T)         301201154           Q813, 814         2SC1384 (R or S)         301201162           Q819, 820         2SK68A (L or M)         302001113           Q901, 903         2SC1380 (S or T)         301201171           Q901, 903         2SC1980 (S or T)         301201171           Q901, 903         2SC1980 (S or T)         301201171           Q901, 904         BZ-120, Zener, 3.6V, 400mW         300313030           Q901, 905         BZ-120, Zener, 12V, 1W         300313030           D602, 811 to 814         WZ-162, Zener, 16V, 500mW         300313030           D815 to 818         H18B, Diode (Ge)         300111008           D819 to 829         MA-150, Diode (Si)         300111016           D901         SVB-20, Rectifier         300919034           D901         SFL8C, Rectifier         300919034           D901         SFL8C, Rectifier         300313009           D909, 910         BZ-240, Zener, 24V, 1W         300313009	TRAN	ISISTORS, DIODES AND IC	'S
Q403, 404, 904   Q5A921 (S or T)   301001145		•	
Q405, 902   2SC1318 (S)			
Q501, 502         2SC1327 (R or S) μPA63H (M1 or M2), Dual FET 302001121           Q811, 812, 815 816, 906         2SC828 (S or T)         301201134           Q813, 814 2817 812 821 0819, 820         2SC1384 (R or S)         301201162           Q819, 820 29403         2SK68A (L or M)         302001113           Q901, 903 25C1980 (S or T)         301201174           D403 B2-120, Zener, 12V, 1W         300313004           D601, 906 WZ-162, Zener, 16.7V, 500mW         300313004           D815 to 818 B15 to 818 B15 to 818 B15 to 818 B15 to 829 903 to 905         MA-150, Diode (Si) 30011106           D800 S7 P30 B2-240, Zener, 24V, 1W 300313005         300110162           D901 S5VB-20, Rectifier 300919032 S71K4, Rectifier 300919032         30011008           D907 908 B2-240, Zener, 24V, 1W 300313005         300313005           D909, 910 B2-140, Zener, 14V, 1W 300313005         303452152           IC601 S1         30141039           IC701, 702, 811 IC812, 813         TA7612AP           VARIABLE RESISTORS           VR501 Y8601 Y8701, 702, 703 Y8811, 812         YSCKWT, Balance Control 503452152           VR601 Y8601 Y8701, 702, 703 Y8611, 812         YSCKWT, Balance Control 5052121148           YR701, 702, 703 Y8701, 702			
G601         μPA63H (M1 or M2), Dual FET 302001121           Q811, 812, 815 816, 906         3CSC828 (S or T)         301201115           Q813, 814         2SCC1384 (R or S)         301201162           Q817, 818, 821 822 to 833         2SA564 (Q, R or S)         301001146           Q819, 820         2SK68A (L or M)         302001113           Q901, 903         2SC1380 (S or T)         301201171           D401, 402         B2-120, Zener, 12V, 1W         300313030           D602, 811 to 814         WZ-162, Zener, 16V, 500mW         300313036           D602, 815 to 818         WZ-162, Zener, 6.7V, 500mW         300313036           D819 to 829 903 to 905         MA-150, Diode (Gi)         300111008           D819 to 829 903 to 905         MA-150, Diode (Gi)         300111016           D901         S5VB-20, Rectifier         300919032           S914-4, Rectifier         300919032           S979-908         B2-240, Zener, 24V, 1W         300313006           B2-240, Zener, 14V, 1W         300313006           SEL8801R02, LED ARRAY         300414039           IC501, 703         NJM4558D-D, Tone, etc.         303452220           VARIABLE RESISTORS         VARIABLE RESISTORS           VR501         250KWT, Balance Control         515121130	Q405, 902		301201155
G601         μPA63H (M1 or M2), Dual FET 302001121           Q811, 812, 815 816, 906         3CSC828 (S or T)         301201115           Q813, 814         2SCC1384 (R or S)         301201162           Q817, 818, 821 822 to 833         2SA564 (Q, R or S)         301001146           Q819, 820         2SK68A (L or M)         302001113           Q901, 903         2SC1380 (S or T)         301201171           D401, 402         B2-120, Zener, 12V, 1W         300313030           D602, 811 to 814         WZ-162, Zener, 16V, 500mW         300313036           D602, 815 to 818         WZ-162, Zener, 6.7V, 500mW         300313036           D819 to 829 903 to 905         MA-150, Diode (Gi)         300111008           D819 to 829 903 to 905         MA-150, Diode (Gi)         300111016           D901         S5VB-20, Rectifier         300919032           S914-4, Rectifier         300919032           S979-908         B2-240, Zener, 24V, 1W         300313006           B2-240, Zener, 14V, 1W         300313006           SEL8801R02, LED ARRAY         300414039           IC501, 703         NJM4558D-D, Tone, etc.         303452220           VARIABLE RESISTORS         VARIABLE RESISTORS           VR501         250KWT, Balance Control         515121130	Q501, 502		301201134
Q811, 812, 815 816, 906       2SC828 (S or T)       301201115         Q813, 814 Q817, 818, 821 822 to 833       2SC4384 (R or S)       301201162         Q819, 820 			302001121
816, 906  0813, 814  0813, 814  2SC1384 (R or S)  3012011162  2812 to 833  0819, 820  2SK68A (L or M)  302001113  2SC1980 (S or T)  3012011162  2SC1980 (S or T)  3012011171  3002011131  3012011171  300313039  BZ-120, Zener, 3.6V, 400mW 300313039  BZ-120, Zener, 16V, 500mW 300313030  BZ-120, Zener, 16V, 500mW 300313030  BZ-120, Zener, 16V, 500mW 300313030  BZ-120, Zener, 6.7V, 500mW 300313030  BZ-120, Zener, 6.7V, 500mW 300313030  BZ-140, Zener, 6.7V, 500mW 300313030  BRI 5 to 818  BR19 to 829  903 to 905  BR-152, Rectifier 300919032  SSVB-20, Rectifier 300919032  SSVB-20, Rectifier 300919032  SR1K-4, Rectifier 300919032  SSVB-20, Rectifier 300919032  SSVB-20, Rectifier 300919032  SF1K-4, Rectifier 300919032  SF1K-4, Rectifier 300919032  SF1K-4, Pectifier 300919032  SCL8801R02, LED ARRAY 300414039  BZ-140, Zener, 14V, 1W 300313005  SEL8801R02, LED ARRAY 300414039  303452192  IC501, 703  INM4558D-D, Tone Amp, etc. 303452152  IC601  SI-1460H, Power Amp 303452120  VARIABLE RESISTORS  VARIABLE RE	0011 012 015	)	
Q813, 814       ZSC1384 (R or S)       301201162         Q817, 818, 821       2SA564 (Q, R or S)       301001146         Q819, 820       2SK68A (L or M)       302001113         Q901, 903       2SC1980 (S or T)       301201171         D401, 402       RD3-6EC, Zener, 3.6V, 400mW       300313030         D601, 906       WZ-162, Zener, 16V, 500mW       300313031         D602, 811 to 814       WZ-067, Zener, 6.7V, 500mW       300313036         D819 to 829       MA-150, Diode (Ge)       300111008         D830       RB-152, Rectifier       300919038         D901       S5VB-20, Rectifier       300919038         D907, 908       BZ-240, Zener, 24V, 1W       300313009         D909, 910       BZ-140, Zener, 14V, 1W       300313009         D909, 910       BZ-140, Zener, 14V, 1W       300313009         IC401, 402       HA-1457W-02, Phono Amp       303452192         IC501, 703       NJM4558D-D, Tone Amp, etc.       303452152         IC701, 702, 811       NJM4558D, Tone, etc.       303452220         VRF001       Z50KWT, Balance Adj       51050218         VRF001       Z50KWT, Balance Adj       51050219         VRF011, 702, 703       NJM 58, Level Ind Cal       51050219         V		2SC828 (S or T)	301201115
Q817, 818, 821       2SA564 (Q, R or S)       301001146         8219, 820       2SK68A (L or M)       302001113         Q901, 903       2SC1980 (S or T)       301201171         D401, 402       RD3-6EC, Zener, 3.6V, 400mW       300313039         D403       BZ-120, Zener, 16V, 500mW       300313036         D601, 906       WZ-162, Zener, 16V, 500mW       300313036         D815 to 818       WZ-067, Zener, 6.7V, 500mW       300313036         D815 to 818       KK188, Diode (Ge)       300111008         D819 to 829       MA-150, Diode (Si)       300111016         D830       RB-152, Rectifier       300919038         D901       S5VB-20, Rectifier       300919038         D907, 908       BZ-240, Zener, 24V, 1W       300313009         D909, 910       BZ-140, Zener, 14V, 1W       300313009         D909, 910       BZ-140, Zener, 14V, 1W       300313005         SEL8801R02, LED ARRAY       300414039         IC401, 402       HA-1457W-02, Phono Amp       303452152         IC501, 703       NJM4558D-D, Tone, etc.       303452152         IC701, 702, 811       NJM4558D, Tone, etc.       303452208         VRRIABLE RESISTORS       VRIABLE RESISTORS         VRS01       250KWT, Balance Control <td>0.0,000</td> <td>, · · · · · · · · · · · · · · · · · · ·</td> <td></td>	0.0,000	, · · · · · · · · · · · · · · · · · · ·	
822 to 833	Q813, 814	2SC1384 (R or S)	301201162
Q819, 820 Q819, 820 Q819, 903 Q819, 906 Q811 to 814 Q8160, 906 Q811 to 814 Q8160, 26ner, 12V, 1W Q811 to 818 Q819 to 829 Q903 to 905 Q8160, 906 Q811 to 819 Q819 to 829 Q903 to 905 Q8160, 906 Q811 to 819 Q819 to 829 Q903 to 905 Q8160, 906 Q819, 900 Q8160, 906 Q819, 900 Q8160, 906 Q811 to 814 Q8160, 906 Q819, 900 Q8160, 900 Q80313010 Q80313010 Q8031306 Q901 Q909, 910 Q8011108 Q809, 910 Q809, 910 Q809, 910 Q809, 910 Q8160, 900 Q909, 910 Q90,	Q817, 818, 821	)	
Q901, 903	822 to 833	25A564 (Q, R or S)	301001146
Q901, 903	O819 820	2SK68A (L or M)	302001113
D401, 402         RD3.6EC, Zener, 3.6V, 400mW 300313039           D403         BZ-120, Zener, 12V, 1W 300313004           D601, 906         WZ-162, Zener, 16V, 500mW 300313017           D602, 811 to 818         WZ-067, Zener, 6.7V, 500mW 300313017           D815 to 818         K188, Diode (Ge) 300111008           D819 to 829 903 to 905         MA-150, Diode (Si) 300111016           D830         RB-152, Rectifier 300919038           D901         S5VB-20, Rectifier 300919032           D902         SR1K-4, Rectifier 300919034           D907, 908         BZ-240, Zener, 24V, 1W 300313009           D909, 910         BZ-140, Zener, 14V, 1W 300313009           SEL8801R02, LED ARRAY 300414039           IC601, 703         NJM4558D-D, Tone Amp, etc. 303452152           IC601         SI-1460H, Power Amp 303452208           VARIABLE RESISTORS           VR501         Z50KWT, Balance Control 515121130           VR601         300B, DC Balance Adj 510502187           VR701, 702, 703         S0KWT × 2, Tone Control 525121148           VR811, 812         S0KWT × 2, Volume Control 525321118           VR801         SWITCHES           S1         SWITCHES           S1         SWITCHES           S2         Slide, Remote, Phono Selector 614030827      <			
D403   BZ-120, Zener, 12V, 1W   300313004   D601, 906   WZ-162, Zener, 16V, 500mW   300313017   S002, 811 to 818   WZ-067, Zener, 6.7V, 500mW   300313018018   S00313018018   WZ-067, Zener, 6.7V, 500mW   300313018018   S0031809   WX-162, Zener, 6.7V, 500mW   300313036   S0315096   WX-162, Zener, 24V, 1W   300313009   SVB-20, Rectifier   300919032   S71K-4, Rectifier   300919032   S71K-4, Rectifier   300919032   S71K-4, Rectifier   300919032   S71K-4, Rectifier   300919034   S0313009   SVB-20, Rectifier   300919024   S03013009   SEL8801R02, LED ARRAY   300313009   SEL8801R02, LED ARRAY   300313009   SEL8801R02, LED ARRAY   300313009   SEL8801R02, LED ARRAY   3003452192   S03452192   S03452152   S03452215   S03452515   S03452515   S03452515   S03452515   S03452515   S03452515   S03452515			
D601, 906         WZ-162, Zener, 16 V, 500mW         300313017           D602, 811 to 814         WZ-067, Zener, 6.7V, 500mW         300313036           D819 to 829         MA-150, Diode (Ge)         300111008           D830         RB-152, Rectifier         300919038           D901         S5VB-20, Rectifier         300919032           D907, 908         BZ-240, Zener, 24V, 1W         300313005           D909, 910         BZ-140, Zener, 14V, 1W         300313005           SEL8801R02, LED ARRAY         300414039           IC401, 402         HA-1457W-02, Phono Amp         303452192           IC501, 703         NJM4558D-D, Tone Amp, etc.         303452192           IC701, 702, 811         NJM4558D, Tone, etc.         303452208           VARIABLE RESISTORS           VR501         250KWT, Balance Control         515121130           VR601         300B, DC Balance Adj         510502187           VR701, 702, 703         50KWT x 2, Tone Control         525121148           VR701, 702, 703         50KWT x 2, Tone Control         525121148           VR801         SWITCHES         51           S1         Push 3-key gang, Function         525321118           SWITCHES           S1         Push	D401, 402		300313039
D602, 811 to 814         WZ-067, Zener, 6.7V, 500mW         300313036           D815 to 818         1K188, Diode (Ge)         300111008           D819 to 829 y03 to 905         MA-150, Diode (Si)         300111016           D830         RB-152, Rectifier         300919038           D901         S5VB-20, Rectifier         300919032           D907, 908         BZ-240, Zener, 24V, 1W         300313009           D909, 910         BZ-140, Zener, 14V, 1W         300313009           SEL8801R02, LED ARRAY         300414039           IC401, 402         HA-1457W-02, Phono Amp         303452192           IC501, 703         NJM4558D-D, Tone Amp, etc.         303452215           IC601         SI-1460H, Power Amp         303452220           VARIABLE RESISTORS         VARIABLE RESISTORS           VR501         250KWT, Balance Control         515121130           VR601         300B, DC Balance Adj         510502187           VR701, 702, 703         50KWT x. 2, Tone Control         525121148           VR811, 812         50KWT x. 2, Tone Control         525321118           SWITCHES           S1         Push 3-key gang, Function         5265212148           S2         Side, Remote, Phono Selector         615212273 <tr< td=""><td></td><td>BZ-120, Zener, 12V, 1W</td><td>300313004</td></tr<>		BZ-120, Zener, 12V, 1W	300313004
D602, 811 to 814         WZ-067, Zener, 6.7V, 500mW         300313036           D815 to 818         1K188, Diode (Ge)         300111008           D819 to 829 y03 to 905         MA-150, Diode (Si)         300111016           D830         RB-152, Rectifier         300919038           D901         S5VB-20, Rectifier         300919032           D907, 908         BZ-240, Zener, 24V, 1W         300313009           D909, 910         BZ-140, Zener, 14V, 1W         300313009           SEL8801R02, LED ARRAY         300414039           IC401, 402         HA-1457W-02, Phono Amp         303452192           IC501, 703         NJM4558D-D, Tone Amp, etc.         303452215           IC601         SI-1460H, Power Amp         303452220           VARIABLE RESISTORS         VARIABLE RESISTORS           VR501         250KWT, Balance Control         515121130           VR601         300B, DC Balance Adj         510502187           VR701, 702, 703         50KWT x. 2, Tone Control         525121148           VR811, 812         50KWT x. 2, Tone Control         525321118           SWITCHES           S1         Push 3-key gang, Function         5265212148           S2         Side, Remote, Phono Selector         615212273 <tr< td=""><td>D601, 906</td><td>WZ-162, Zener, 16 V, 500mW</td><td>300313017</td></tr<>	D601, 906	WZ-162, Zener, 16 V, 500mW	300313017
D815 to 818       1K188, Diode (Ge)       300111008         D819 to 829 903 to 905       MA-150, Diode (Si)       300111016         D830       RB-152, Rectifier       300919038         D901       S5VB-20, Rectifier       300919032         D902       SR1K-4, Rectifier       300919024         D907, 908       BZ-240, Zener, 24V, 1W       300313009         D909, 910       BZ-140, Zener, 14V, 1W       300313009         SEL8801 R02, LED ARRAY       300414039         IC401, 402       HA-1457W-02, Phono Amp       303452192         IC501, 703       NJM4558D-D, Tone Amp, etc.       303452192         IC601       SI-1460H, Power Amp       303452220         IC701, 702, 811       NJM4558D, Tone, etc.       303452220         VARIABLE RESISTORS       VARIABLE RESISTORS         VR501       250KWT, Balance Control       515121130         VR601       300B, DC Balance Adj       510502187         VR701, 702, 703       50KB, Level Ind Cal       510502187         VR701, 702, 703       50KB, Level Ind Cal       510502191         VR001       100KB x 2, Volume Control       525321118         SWITCHES         S1       Push 3-key gang, Function       615212273 <td< td=""><td></td><td></td><td></td></td<>			
D819 to 829   903 to 905   MA-150, Diode (Si)   300111016		-	
MA-150, Diode (Si)   300111016		IK 188, Diode (Ge)	300111008
D830 RB-152, Rectifier 300919038 D901 S5VB-20, Rectifier 300919032 D902 SR1K-4, Rectifier 300919032 D907, 908 BZ-240, Zener, 24V, 1W 300313009 D909, 910 BZ-140, Zener, 14V, 1W 300313009 IC401, 402 HA-1457W-02, Phono Amp 303452192 IC501, 703 NJM4558D-D, Tone Amp, etc. 303452192 IC701, 702, 811 NJM4558D, Tone, etc. 303452220 IC701, 702, 811 NJM4558D, Tone, etc. 303452220 IC701, 702, 811 TA7612AP 30345220  VARIABLE RESISTORS  VR501 250KWT, Balance Control 515121130 VR601 300B, DC Balance Adj 510502187 VR701, 702, 703 50KWT x 2, Tone Control 525121148 VR701, 702, 703 50KWT x 2, Tone Control 525121148 VR811, 812 50KB, Level Ind Cal 510502191 VR001 100KB x 2, Volume Control 525321118  SWITCHES S1 Push 3-key gang, Function 52612273 Rotary, Tape Monitor 614030827 S2 Slide, Remote, Phono Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 2-key, Tone Defeat, etc. 614040828 S9, 10 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Midget Type (STD) 341222500	D819 to 829	MA 150 Dinda (C:)	200444242
D830         RB-152, Rectifier         300919038           D901         S5VB-20, Rectifier         300919032           D907, 908         BZ-240, Zener, 24V, 1W         300313009           D909, 910         BZ-140, Zener, 14V, 1W         300313005           SEL8801 R02, LED ARRAY         300414039           IC401, 402         HA-1457W-02, Phono Amp         303452192           IC501, 703         NJM4558D-D, Tone Amp, etc.         303452192           IC601         SI-1460H, Power Amp         303452220           IC701, 702, 811         NJM4558D, Tone, etc.         303452220           IC701, 702, 813         TA7612AP         303452208           VARIABLE RESISTORS           VR501         250KWT, Balance Control         515121130           VR601         300B, DC Balance Adj         510502191           VR701, 702, 703         50KWT x 2, Tone Control         525121148           VR811, 812         50KB, Level Ind Cal         510502191           VR001         100KB x 2, Volume Control         525321118           SWITCHES           S1         Push 3-key gang, Function         614030827           S2         Slide, Remote, Phono Selector         615212273           S3         Rotary, Tape Monit	903 to 905	IVIA-150, DIODE (SI)	300111016
D901 S5VB-20, Rectifier 300919032 D902 SR1K-4, Rectifier 300919024 D907, 908 BZ-240, Zener, 24V, 1W 300313009 D909, 910 BZ-140, Zener, 14V, 1W 300313009 IC401, 402 HA-1457W-02, Phono Amp 303452192 IC501, 703 NJM4558D-D, Tone Amp, etc. 303452152 IC601 SI-1460H, Power Amp 303452220 IC701, 702, 811 NJM4558D, Tone, etc. 303452220 IC701, 702, 813 TA7612AP 303452208  VARIABLE RESISTORS  VR501 250KWT, Balance Control 515121130 VR601 300B, DC Balance Adj 510502187 VR701, 702, 703 50KWT, 2, Tone Control 525121148 VR811, 812 50KB, Level Ind Cal 510502191 VR001 100KB x 2, Volume Control 525321118  SWITCHES S1 Push 3-key gang, Function Selector 615212273 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) (207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 Fuse, 1A, 250V, Midget Type (STD) 341222500		RR-152 Rectifier	300010039
D902 SR1K-4, Rectifier 300919024 D907, 908 BZ-240, Zener, 24V, 1W 300313009 D909, 910 BZ-140, Zener, 14V, 1W 300313005 SEL8801R02, LED ARRAY 300414039 IC401, 402 HA-1457W-02, Phono Amp 303452192 IC501, 703 NJM4558D-D, Tone Amp, etc. 303452152 IC601 SI-1460H, Power Amp 303452200 IC701, 702, 811 NJM4558D, Tone, etc. 303452215 IC812, 813 TA7612AP 303452208  VARIABLE RESISTORS  VR501 250KWT, Balance Control 515121130 VR601 300B, DC Balance Adj 510502187 VR701, 702, 703 50KWT × 2, Tone Control 525121148 VR811, 812 50KB, Level Ind Cal 510502191 VR001 100KB × 2, Volume Control 525321118  SWITCHES S1 Push 3-key gang, Function Selector 615212273 SA Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614040828 S9, 10 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240011247 T001 Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 345225100 Fuse, 5A, 250V, Long Type (STD) 34522500		•	
D907, 908 D909, 910 BZ-140, Zener, 24V, 1W D909, 910 BZ-140, Zener, 14V, 1W S00313005 SEL8801R02, LED ARRAY 300414039 IC401, 402 HA-1457W-02, Phono Amp IC501, 703 NJM4558D-D, Tone Amp, etc. SI-1460H, Power Amp IC812, 813 TA7612AP  VARIABLE RESISTORS  VARIABLE RESISTORS  VR501 VR601 VR601 VR601 VR701, 702, 703 VR601 VR811, 812 VR011 VR		•	
D909, 910  SEL8801 R02, LED ARRAY  300414039  IC401, 402  HA-1457W-02, Phono Amp  303452192  IC501, 703  NJM4558D-D, Tone Amp, etc.  IC601  SI-1460H, Power Amp  303452220  IC701, 702, 811  IC812, 813  VARIABLE RESISTORS  VARIABLE RESISTORS  VR501  VARIABLE RESISTORS  VR501  VR601  VR601  VR601  VR601  VR701, 702, 703  VR811, 812  VR01  VR001  SUITCHES  S1  Push 3-key gang, Function Selector  Selector  Solide, Remote, Phono Selector  S1  S04011271  SWITCHES  S1  Push 1-key, Muting S5, 6, 7, 8 (1 set) Push 2-key, Tone Defeat, etc. S1, 12, 13 (1 set)  Push 3-key, Speaker, Power  OTHERS  L601  Coil, Anti-parasitic RY901  Relay, Protection Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D)  Lamp, 8V, 150mA F901  Fuse, 1A, 250V, Long Type (STD)  S0345229  303452208  S03452220  S03452220  S03452220  S03452220  S15121130 S03452220  S15121130 S03452220  S15121130 S03452208  S15121130 S03452220  S15121130 S15121130 S03452208  S15121130 S15121130 S15121130 S15121130 S03452220 S15121130 S15121130 S03452220 S15121130 S15121130 S15121130 S15121130 S15121130 S15121130 S03452220 S15121130 S15121130 S03452220 S15121130 S15121130 S15121130 S03452220 S15121130 S15121130 S03452208  S15121130 S15121210 S15121210 S15121210 S1512122100 S15121222100 S15121222100 S15121222100 S15121222200		SK1K-4, Rectifier	300919024
D909, 910  SEL8801 R02, LED ARRAY  300414039  IC401, 402  HA-1457W-02, Phono Amp  303452192  IC501, 703  NJM4558D-D, Tone Amp, etc.  IC601  SI-1460H, Power Amp  303452220  IC701, 702, 811  IC812, 813  VARIABLE RESISTORS  VARIABLE RESISTORS  VR501  VARIABLE RESISTORS  VR501  VR601  VR601  VR601  VR601  VR701, 702, 703  VR811, 812  VR01  VR001  SUITCHES  S1  Push 3-key gang, Function Selector  Selector  Solide, Remote, Phono Selector  S1  S04011271  SWITCHES  S1  Push 1-key, Muting S5, 6, 7, 8 (1 set) Push 2-key, Tone Defeat, etc. S1, 12, 13 (1 set)  Push 3-key, Speaker, Power  OTHERS  L601  Coil, Anti-parasitic RY901  Relay, Protection Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D)  Lamp, 8V, 150mA F901  Fuse, 1A, 250V, Long Type (STD)  S0345229  303452208  S03452220  S03452220  S03452220  S03452220  S15121130 S03452220  S15121130 S03452220  S15121130 S03452208  S15121130 S03452220  S15121130 S15121130 S03452208  S15121130 S15121130 S15121130 S15121130 S03452220 S15121130 S15121130 S03452220 S15121130 S15121130 S15121130 S15121130 S15121130 S15121130 S03452220 S15121130 S15121130 S03452220 S15121130 S15121130 S15121130 S03452220 S15121130 S15121130 S03452208  S15121130 S15121210 S15121210 S15121210 S1512122100 S15121222100 S15121222100 S15121222100 S15121222200		BZ-240, Zener, 24V, 1W	300313009
SEL8801R02, LED ARRAY   300414039   1C401, 402   HA-1457W-02, Phono Amp   303452192   1C501, 703   NJM4558D-D, Tone Amp, etc.   303452220   1C701, 702, 811   NJM4558D, Tone, etc.   303452215   1C812, 813   TA7612AP   303452208   VARIABLE RESISTORS   VAR01   250KWT, Balance Adj   510502187   VR701, 702, 703   50KWT × 2, Tone Control   525121148   VR811, 812   50KB, Level Ind Cal   510502191   VR001   100KB × 2, Volume Control   525321118   SWITCHES   S1	D909, 910	BZ-140, Zener, 14V, 1W	300313005
IC401, 402	2000, 0.0		
NJM4558D-D, Tone Amp, etc.   303452152     IC601			
IC601	IC401, 402	HA-145/W-02, Phono Amp	303452192
IC601	IC501, 703	NJM4558D-D, Tone Amp, etc.	303452152
IC701, 702, 811   NJM4558D, Tone, etc.   303452215   303452208   TA7612AP   303452208   VARIABLE RESISTORS   VR501   250KWT, Balance Control   515121130   VR601   300B, DC Balance Adj   510502187   VR701, 702, 703   50KWT × 2, Tone Control   525121148   VR811, 812   50KB, Level Ind Cal   510502191   VR001   100KB × 2, Volume Control   525321118   SWITCHES   S1		SI-1460H, Power Amp	303452220
VARIABLE RESISTORS  VR501			
VARIABLE RESISTORS  VR501			
VR501	10012, 813	1A/012AF	303452208
VR601 300B, DC Balance Adj 510502187 VR701, 702, 703 50KWT x 2, Tone Control 525121148 VR811, 812 50KB, Level Ind Cal 510502191 VR001 100KB x 2, Volume Control 525321118  SWITCHES S1 Push 3-key gang, Function Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (CEE) 345252100 Fost 12 Fuse, 5A, 250V, Long Type (STD) 341222500	\	ARIABLE RESISTORS	
VR601 300B, DC Balance Adj 510502187 VR701, 702, 703 50KWT × 2, Tone Control 525121148 VR811, 812 50KB, Level Ind Cal 510502191 VR001 100KB × 2, Volume Control 525321118  SWITCHES S1 Push 3-key gang, Function Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (CEE) 345252100 Fox 100 Fuse, 5A, 250V, Long Type (STD) 341222500	VR501	250KWT Balance Control	515121120
VR701, 702, 703 50KWT x 2, Tone Control 525121148 VR811, 812 50KB, Level Ind Cal 510502191 VR001 100KB x 2, Volume Control 525321118  SWITCHES S1 Push 3-key gang, Function Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500			
VR811, 812 VR001  50KB, Level Ind Cal VR001  525321118  SWITCHES  S1 Push 3-key gang, Function Selector S1ide, Remote, Phono Selector S2 Slide, Remote, Phono Selector S4 Push 1-key, Muting S5, 6, 7, 8 (1 set) S9, 10 (1 set) Push 2-key, Tone Defeat, etc. Push 3-key, Speaker, Power  CTHERS  L601 Coil, Anti-parasitic RY901 Relay, Protection Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D) PL001 Lamp, 8V, 150mA Fuse, 1A, 250V, Long Type (CEE) F001 Fuse, 5A, 250V, Long Type (STD) 341222500			
SWITCHES   S1	VR701, 702, 703	50KWT x 2, Tone Control	525121148
SWITCHES  S1	VR811, 812	50KB, Level Ind Cal	510502191
S1 Push 3-key gang, Function Selector 614030827 S2 Slide, Remote, Phono Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614040828 S9, 10 (1 set) Push 2-key, Tone Defeat, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500	VR001	100KB x 2, Volume Control	525321118
S1 Push 3-key gang, Function Selector 614030827 S2 Slide, Remote, Phono Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614040828 S9, 10 (1 set) Push 2-key, Tone Defeat, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Long Type (CEE) 345252100 Foot		SWITCHES	
Selector 614030827 S2 Slide, Remote, Phono Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614040828 S9, 10 (1 set) Push 2-key, Tone Defeat, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Footl Fuse, 5A, 250V, Long Type (STD) 341222500	<b>S</b> 1	_	
S2 Slide, Remote, Phono Selector 615212273 S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Long Type (CEE) Tuse, 5A, 250V, Long Type (STD) 341222500	J 1		04400000
S3 Rotary, Tape Monitor 601011271 S4 Push 1-key, Muting 614010144 S5, 6, 7, 8 (1 set) Push 4-key, Loudness, etc. 614020437 S11, 12, 13 (1 set) Push 3-key, Speaker, Power 614030829  OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Long Type (CEE) 345252100 Footl Fuse, 5A, 250V, Long Type (STD) 341222500			ь14030827
S4       Push 1-key, Muting       614010144         S5, 6, 7, 8 (1 set)       Push 4-key, Loudness, etc.       614040828         S9, 10 (1 set)       Push 2-key, Tone Defeat, etc.       614020437         S11, 12, 13 (1 set)       Push 3-key, Speaker, Power       614030829         OTHERS         L601       Coil, Anti-parasitic       228641126         RY901       Relay, Protection       240111247         T001       Power Transformer       (120, 220, 240V, Type G)       207001492         (100, 120V, Type D)       204001492         PL001       Lamp, 8V, 150mA       359101127         F901       Fuse, 1A, 250V, Long Type       (STD)       341222100         Fuse, 1A, 250V, Midget Type       (CEE)       345252100         F001       Fuse, 5A, 250V, Long Type       (STD)       341222500	S2	Slide, Remote, Phono Selector	615212273
S4       Push 1-key, Muting       614010144         S5, 6, 7, 8 (1 set)       Push 4-key, Loudness, etc.       614040828         S9, 10 (1 set)       Push 2-key, Tone Defeat, etc.       614020437         S11, 12, 13 (1 set)       Push 3-key, Speaker, Power       614030829         OTHERS         L601       Coil, Anti-parasitic       228641126         RY901       Relay, Protection       240111247         T001       Power Transformer       (120, 220, 240V, Type G)       207001492         (100, 120V, Type D)       204001492         PL001       Lamp, 8V, 150mA       359101127         F901       Fuse, 1A, 250V, Long Type       (STD)       341222100         Fuse, 1A, 250V, Midget Type       (CEE)       345252100         F001       Fuse, 5A, 250V, Long Type       (STD)       341222500	S3	Rotary, Tape Monitor	601011271
S5, 6, 7, 8 (1 set) S9, 10 (1 set) Push 4-key, Loudness, etc. Push 2-key, Tone Defeat, etc. Push 3-key, Speaker, Power  OTHERS  L601 RY901 Relay, Protection Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D) PL001 Lamp, 8V, 150mA Fuse, 1A, 250V, Long Type (STD) Fuse, 1A, 250V, Long Type (CEE) F001 Push 3-key, Loudness, etc. 614040828 614020437 614030829  OTHERS  228641126 240111247 207001492 204001492 204001492 359101127 341222100 Fuse, 1A, 250V, Midget Type (CEE) Fuse, 5A, 250V, Long Type (STD) 341222500			
S9, 10 (1 set) S11, 12, 13 (1 set) Push 2-key, Tone Defeat, etc. Push 3-key, Speaker, Power  OTHERS  L601 Coil, Anti-parasitic RY901 Relay, Protection T001 Power Transformer (120, 220, 240V, Type G) (100, 120V, Type D) PL001 Lamp, 8V, 150mA Fuse, 1A, 250V, Long Type (STD) Fuse, 1A, 250V, Long Type (CEE) F001 Fuse, 5A, 250V, Long Type (STD) S41222500			
OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Long Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500			
OTHERS  L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500			614020437
L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500	S11, 12, 13 (1 set)	Push 3-key, Speaker, Power	614030829
L601 Coil, Anti-parasitic 228641126 RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500			
RY901 Relay, Protection 240111247 T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500			
T001 Power Transformer (120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500			228641126
(120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Fuse, 5A, 250V, Long Type (STD) 341222500	RY901	Relay, Protection	240111247
(120, 220, 240V, Type G) 207001492 (100, 120V, Type D) 204001492 PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Fuse, 5A, 250V, Long Type (STD) 341222500	T001	Power Transformer	
PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 Foot Fuse, 5A, 250V, Long Type (STD) 341222500			207001402
PL001 Lamp, 8V, 150mA 359101127 F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500			
F901 Fuse, 1A, 250V, Long Type (STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500			
(STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500	PL001		359101127
(STD) 341222100 Fuse, 1A, 250V, Midget Type (CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500	F901	Fuse, 1A, 250V, Long Type	
Fuse, 1A, 250V, Midget Type (CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500			341222100
(CEE) 345252100 F001 Fuse, 5A, 250V, Long Type (STD) 341222500			J+1222100
F001 Fuse, 5A, 250V, Long Type (STD) 341222500			
(STD) 341222500		(CEE)	345252100
(STD) 341222500		Fuse, 5A, 250V, Long Type	
	F001		
1 436, 2.0A 1, 200 v, Wilaget	F001		341222500
Type (CEE) 345952250	F001	(STD)	341222500

	ematic ation Description	Part No.
C001	Noise Canceller,	
	NSK-135 (120V Area)	470101118
	NSK-132 (Canada Only	470101129
	PME271M, 0.047μF′X′	
	(220/240V Area)	470101122
	ECQ-EC 0.047μF	
	(220/240V Area)	470101126
C002,	, 003 Noise Canceller,	
	MMS-472(M) (120V Ar	ea) 470101133
	PME271Y447 (220/240	V Area) 470101124
	Phono Amp PCB Ass'y	141510175
	Tone Amp & Muting PCB Ass'y	141710329
	Tone Control PCB Ass'y	141710331
	Main Amp PCB Ass'y (w/o Power IC	and
	Heatsink)	141610331
	Power Supply PCB Ass'y (w/Long Fu	se) 141810995
	Power Supply PCB Ass'y (w/Midget F	use) 141811045
	DIN Socket PCB Ass'y	141810996
	Speaker Switch PCB Ass'y (w/Power	SW) 141810951
	Function Selector PCB Ass'y	141810958
	Indicator Driver PCB Ass'y	141810997
	Switch Control Unit w/Flex Wire	654101152
	Fuse Holder (Long Fuse)	648211184
	Fuse Holder (Midget Fuse)	648211245
	Voltage Selector	648211247
	AC Outlet (STD)	648211255
	(Canada Only)	648211141
	Pin Jack, 2P, AUX	624200202
*	Pin Jack, 4P, PHONO, TAPE MONITO	OR 624200204
	Speaker Terminal, 4P	642400111
	Ground Terminal	770911119
	Fuse Clip, Long Fuse	648211146
	Fuse Clip, Midget Fuse	648211147
	DIN Socket	625001119
	Headphone Jack	626110033
	Front Panel (Metallic Brown)	111911498
	(Black)	111911499
	Knob, Volume (Metallic Brown)	116310289
	(Black)	116310302
	Knob, Selector (Metallic Brown) (Black)	116310285
		116310301
	Knob, Balance, etc. (Metallic Brown)	116310287
	(Black) Button, Function, etc. (Metallic Brow	116310288
	(Black)	n) 116210058 116210059
	Button, Loudness, etc. (Metallic Brow	
	(Black)	116210057
	Scale Board	112011375
	Bonnet	138011304
	Foot (H=9.5mm)	673402025
	Wire Clamper	672200859
	Binder, Capacitor Mtg	672200878
Screw	, M2x4mm (Ni), Binding Head, LED	0,22000,0
	Array Mtg	705212004
	M3x4mm (Ni), Binding Head	705213004
	M3x6mm (Ni), Binding Head	705213006
	M3x8mm (Ni), Binding Head	705213008
	M3x8mm (BLZ), Binding Head	705223008
	M3x10mm (Ni), Binding Head	705213010
	M3x15mm (Ni), Binding Head	705213010
	M3x6mm (Ni), Countersunk, Panel Mt	
	M3x6mm (Ni), Oval-countersunk	702213006
	M4x8mm (BLZ), w/Flat Washer,	, 522, 5000
	Binding Head	715224008
	M3x6mm (BLZ), Flat Head	770911166
	•	

Screw Tapping-I	I, 3x6mm (Ni), Oval-countersunk	722213006
	ZBC), Bottom Cover Mtg	726203008
3x8mm (f	NI)	726213008
3x10mm	(BLZ)	726223010
3x10mm	(Ni)	726213010
3x12mm	(Ni)	726213012
4x10mm	(BLZ), Binding Head	725224010
Screw, Tap-tight	, 4x10mm (Ni), Binding Head	765214010
Washer, F		770500007
	M9	770500008
Washer, S	pring, M4	770500004
Washer, T	eethed, M3	770500014
Nut,	M3	770402201
	M4	770402202
	M7	770402205
	M9	770402207
	M12	770402209

# Specifications Caractéristiques

#### AMPLIFIER SECTION

Continuous Power Output . . . 60 watts\* per channel, min. RMS,

both channels driven at 8 ohms from 20 to 20,000Hz with no more than 0.03% total harmonic

distortion

Total Harmonic Distortion. . . No more than 0.03% (continuous

(20 to 20,000Hz from AUX) rated power output) No more than 0.009% (conti-

nuous 1/2 rated power output) No more than 0.01% (1 watt per channel power output)

Intermodulation Distortion . . No more than 0.02% (continuous

rated power output) 60Hz: 7kHz = 4:1

No more than 0.03% (continous 1/2 rated power output)

No more than 0.03% (1 watt per channel power output)

Damping Factor. . . . . . . . . . . . . . . . 50 (20 to 20,000Hz, 8 ohms)

Input Sensitivity Impedance

PHONO (MM) . . . . . . . 2.5mV/70, 50, 35 kilohms

TUNER, AUX.......150mV/30 kilohms TAPE MONITOR 1, 2 . . .150mV/30 kilohms

Overload Level (T.H.D. 0.5%, 1kHz) 

TUNER, AUX......6V

Frequency Response

AUX, TAPE IN . . . . . . . 5-70,000Hz, +0dB, -1.0dB (at

1 watt per channel power output) 

Tone Control

BASS.....±12dB (50Hz)

TREBLE . . . . . . . . . . ±12dB (15kHz) 

SUBSONIC Filter.....12dB/oct (15kHz) LOUDNESS (volume control set at -40dB position)

.....+10dB (100Hz), +4dB (10kHz)

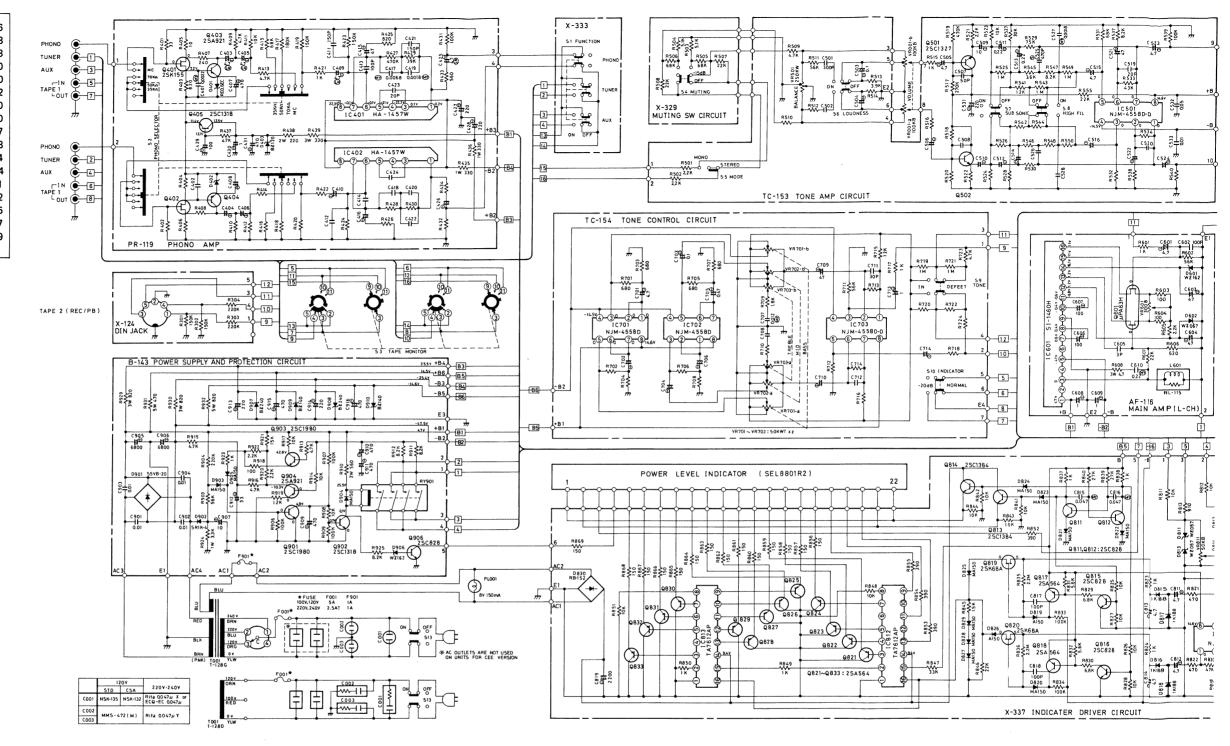
Signal-to-Noise Ratio (IHF, A Network)

PHONO (MM)...........76dB 

MISCELLANEOUS

50Hz or 120, 220, 240V/50-60Hz

Specifications and design subject to possible modification without notice.



#### RESISTORS

5% tolerance, 1/4 watts low-noise type carbon film resistors unless otherwise noted.

k . . . . . Kilohm M....Megohm

#### **CAPACITORS**

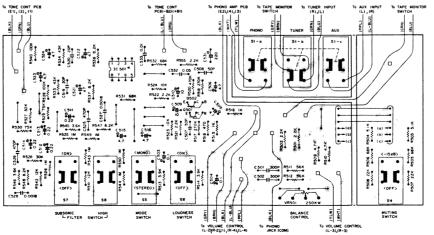
MY....Mylar film capacitor -13- . . . . Electrolytic capacitor

LN . . . . Low-noise type capacitor

Unless otherwise noted, all capacitance values are expressed in mfd.

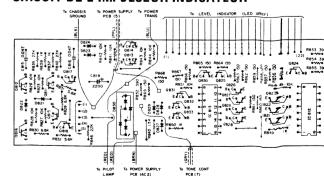
- Voltage reading with VTVM from the point shown to the chassis ground.
- Voltage reading tolerance: within 20%

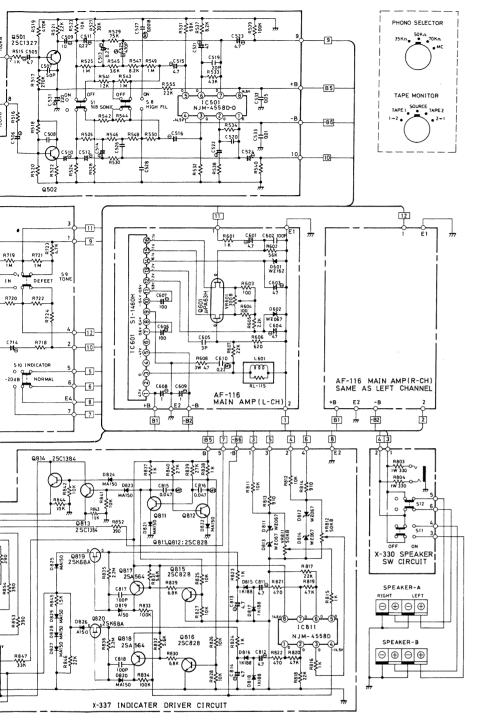
#### TONE AMP AND MUTING SWITCH CIRCUIT CIRCUIT D'AMPLIFICATEUR DE TONALITE ET D'INTERRUPTEUR DE SOURDINE

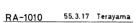


\*IC501 must be Low-noise type.

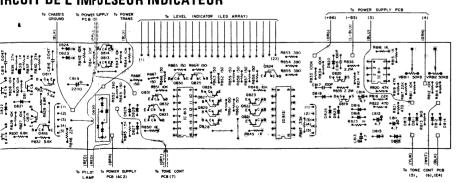
#### INDICATOR DRIVER CIRCUIT CIRCUIT DE L'IMPULSEUR INDICATEUR

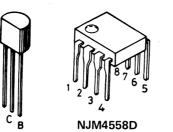






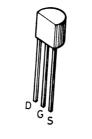
## IDICATOR DRIVER CIRCUIT IRCUIT DE L'IMPULSEUR INDICATEUR



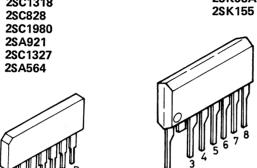


NJM4558DD 2SC1384 2SC1318

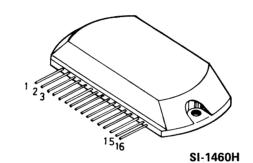
 $\mu$ PA63H

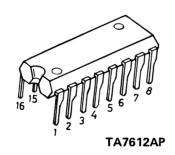


2SK68A

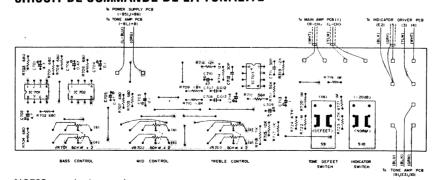


HA1457-02



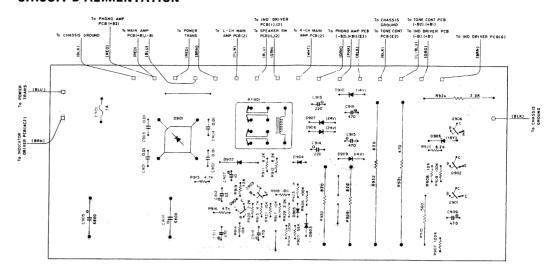


### TONE CONTROL CIRCUIT **CIRCUIT DE COMMANDE DE LA TONALITE**

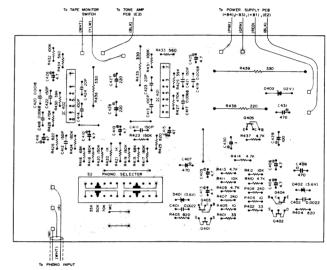


<sup>\*</sup>IC703 must be Low-noise type.

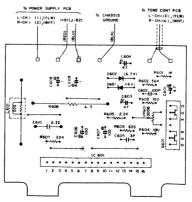
#### POWER SUPPLY CIRCUIT CIRCUIT D'ALIMENTATION



#### PHONO AMP CIRCUIT CIRCUIT D'AMPLIFICATEUR PHONOGRAPHIQUE



## MAIN AMP CIRCUIT CIRCUIT D'AMPLIFICATEUR PRINCIPALE



#### **SPEAKER SWITCH CIRCUIT CIRCUIT DU COMMUTATEUR DE HAUT-PARLEUR**

